



**Missouri Department of Health and Senior Services**

P.O. Box 570, Jefferson City, MO 65102-0570 Phone: 573-751-6400 FAX: 573-751-6010  
RELAY MISSOURI for Hearing and Speech Impaired 1-800-735-2966 VOICE 1-800-735-2466

**Gail Vasterling**  
Director



**Jeremiah W. (Jay) Nixon**  
Governor

April 1, 2015

Tonya Howell  
Remedial Project Manager  
U.S. Environmental Protection Agency Region VII  
11201 Renner Blvd.  
Lenexa, KS 66219

Dear Ms. Howell:

The Missouri Department of Health and Senior Services (MDHSS) received a copy of the *Assessment of Potential Management Actions Related to TCE (Trichloroethylene) in Air and Water in Meramec Caverns, Missouri* (March 17, 2015) prepared by Ozark Underground Laboratory (OUL).

MDHSS is concerned over the references to Occupational Safety and Health Administration (OSHA) standards in the report. The report specifically states that TCE in workplace air is regulated by OSHA. While OSHA does in fact regulate workplace health and safety, OSHA workplace air standards are applicable to commercial/industrial operations where the subject chemicals are in active use or production. Since the source of TCE in air and water within Meramec Caverns is from environmental contamination and not from the use or production of TCE, OSHA standards are not applicable in this instance.

Where potential worker exposures are due to contamination of the environment and not from work practices, risk-based levels protective of both cancer and non-cancer effects (including sensitive individuals) are applicable to both assessing potential exposures and developing risk-based remediation levels.

The key distinctions between OSHA standards and risk-based levels include the underlying assumptions about the context of workplace exposures, the characteristics of the workers being protected, and the level of protection afforded to workers.

OSHA standards specifically apply to workplaces where workers are exposed to hazardous chemicals used in or generated as a result of routine work activities. These workers are assumed to be aware of the chemicals to which they are exposed and can obtain information on them through Right-to-Know laws. OSHA standards assume not only that workers are knowingly exposed to specific chemicals in the workplace, but that they also receive additional protection and training to mitigate exposures. OSHA requires workers to be trained to control or prevent exceedances of its exposure standards (including the use of personal protective equipment to help prevent excessive exposures), and also requires periodic worker health monitoring to ensure that excessive exposures are not occurring. In addition, OSHA standards were developed assuming a healthy adult worker and were not necessarily developed to be protective for sensitive individuals, who may have preexisting health conditions, etc.

[www.health.mo.gov](http://www.health.mo.gov)

**Healthy Missourians for life.**

The Missouri Department of Health and Senior Services will be the leader in promoting, protecting and partnering for health.

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER: Services provided on a nondiscriminatory basis.

07PZ 40496149 3.0



0401 Superfund

Tonya Howell  
April 1, 2015  
Page 2

Although, MDHSS is not specifically questioning the protectiveness of the OSHA levels, we would like to point out that these levels have not been updated in decades and are not based on current science and toxicity data. Scientific evidence shows TCE is more toxic than previously thought and, thus, there have been recent updates to toxicity values used in assessing exposure and developing risk-based remediation levels. Currently, there are several orders of magnitude difference between OSHA standards and current risk-based levels for TCE.

MDHSS' primary concern with respect to use of the OSHA levels in the report prepared by OUL is the potential for misinformation being provided to employees of the cave and misinterpretation of the potential risks. MDHSS previously prepared a letter health consultation (dated December 12, 2014) for employee exposure to TCE within the cave which is based on the current science and toxicity data for TCE. This health consultation evaluates employee exposure and potential health risks to workers and concludes that inhalation exposure to TCE in cave air poses a health risk to individuals working the cave. Of primary concern is the potential for health risks from short-term exposure to TCE. Scientific data provides evidence of the potential for cardiac malformation in a developing fetus due to maternal exposure to TCE. The primary health risks from long-term exposure include effects to the immune system, kidney and liver cancers, and non-Hodgkins lymphoma.

Given these potential health concerns, MDHSS recommends that employees be provided with a copy of the letter health consultation (if this hasn't been done previously) and that they be made aware that MDHSS is available to answer health-related questions as needed. In addition, we respectfully request that the references to OSHA levels be removed from the report.

If you have any questions or concerns, please contact Michelle Hartman of my staff at (573) 751-6102.

Sincerely,

A handwritten signature in black ink, appearing to read "Jonathan Garoutte", with a large, stylized flourish extending from the end of the name.

Jonathan Garoutte, Chief  
Bureau of Environmental Epidemiology

JG:DW:MDH/mp